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*PSEUDOPHALLUS BRASILIENSIS* (PISCES:  
SYNGNATHIDAE), A NEW FRESHWATER  
PIPEFISH FROM BRAZIL

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I recently received eight specimens of an undescribed syngnathine tailpouch pipefish of the genus *Pseudophallus* Herald (1940) from the Rio Tocantins, a major tributary of the lower Rio Amazonas, Brazil. Although the genus is treated in a manuscript being prepared for the Sears Foundation series "Fishes of the Western North Atlantic," there will be considerable delay in completion of that work. Description of the new species is, therefore, given at this time in order to make the name available.

Type-material has been deposited in collections of the Museu de Zoologia da Universidade de São Paulo (MZUSP), National Museum of Natural History, Smithsonian Institution (USNM) and Gulf Coast Research Laboratory Museum (GCRL). Measurements (mm) or proportions referred to standard length (SL) or head length (HL) are given for the holotype followed, in parentheses, by the range for the remainder of the type-series; counts from the holotype are marked with an asterisk (\*). Coloration is described from alcohol preserved specimens. Data used in species comparisons are from my observations on almost all specimens of *Pseudophallus* now available in Central and North American collections. Lists of these examined materials are omitted here, but will be included in the forthcoming general treatment of the genus mentioned above.

I thank the curators of the various institutions that have loaned comparative material. Special acknowledgment is due Dr. Naércio A. Menezes (MZUSP) for providing the specimens of the new species which were obtained by the MZUSP Expedição Permanente da Amazônia. Drawings are by Anne Langenfeld (GCRL). This work was in part supported by National Science Foundation Grant GB-31053X.

***Pseudophallus brasiliensis*, new species**

Figure 1

*Holotype*: MZUSP 10278 (85 mm SL, male); Brazil, Pará, Rio Tocantins, Igarapé Inó, Faro de Panaquera; 01°52'S, 49°10'W; 1 Sept. 1970.

*Allotype*: USNM 212058 (70, female); taken with holotype.

*Paratypes*: MZUSP 10627 (1 specimen, 43 mm SL); taken with holotype. MZUSP 10279 (2, 60–63), GCRL 12755 (2, 56–66); Brazil, Pará, Rio Tocantins, Igarapé Mapará, Parana, Samuuma; 02°05'S, 49°20'W; 5 Sept. 1970. MZUSP 10280 (1, 54); Brazil, Pará, Rio Tocantins, Igarapé Acicurá at Cameta; 02°15'S, 49°30'W; 7 Sept. 1970.

*Diagnosis*: Dorsal fin rays 28 to 31, located on 6.75 to 7.25 tail rings; trunk rings 13; tail rings 31 to 32; median head ridges, opercular and pectoral cover plate ridges, trunk and tail ridges somewhat elevated, distinct; length of dorsal fin in head 0.9 to 1.0; snout without a longitudinal brownish stripe.

*Counts and measurements*: Dorsal fin rays 28(in 1), 29\*(5), 30(1), 31(1); pectoral fin rays 13(4), 14\*(8), 15(4); caudal fin rays 10(8), trunk rings 13(8); tail rings 31(3), 32\*(5); trunk rings covered by dorsal fin 0(8); tail rings covered by dorsal fin 6.75\*(3), 7.0(3), 7.25 (2). Head length 9.5 (5.8–8.1); snout length 3.4 (2.3–3.1); least breadth of snout 0.9 (0.6–0.9); pectoral fin length 1.8 (1.0–1.3); caudal fin length 3.5 (2.3–2.9); length of dorsal fin base 10.1 (5.8–9.1). Head length in SL 8.9 (7.4–8.6); snout length in HL 2.8 (2.5–2.7); dorsal fin base in HL 0.9 (0.9–1.0).

*Description*: Median snout ridge smooth, somewhat elevated, extends from rear of articulation of upper jaw to about anterior third of interorbital (Fig. 2); supraorbital, frontal, nuchal and prenuchal ridges low but distinctly elevated and prominent in all specimens; opercular ridge prominent, complete in 6 specimens (extends across  $\frac{3}{4}$  of opercle in remainder) margined above and below by radiating striae; pectoral cover plate with a distinct anteroventrally directed ridge margined by radiating striae; trunk and tail ridges well defined, their edges distinctly granular or scalloped under 30 $\times$  magnification; width of intermedial scutellar plates on trunk and anterior portion of tail equals about a third the distance between proximal margins of adjacent scutellae. Body

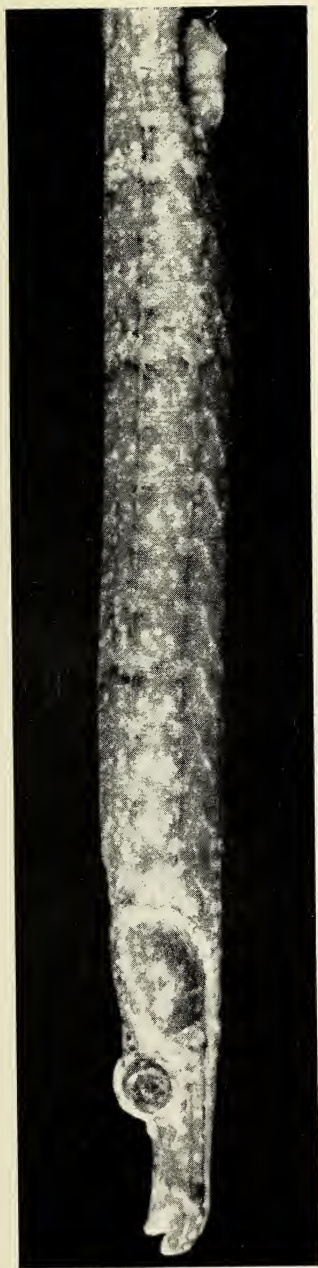


FIG. 1. Head and anterior part of body of *Pseudophallus brasiliensis*; USNM 212058, allotype female, 70 mm SL.

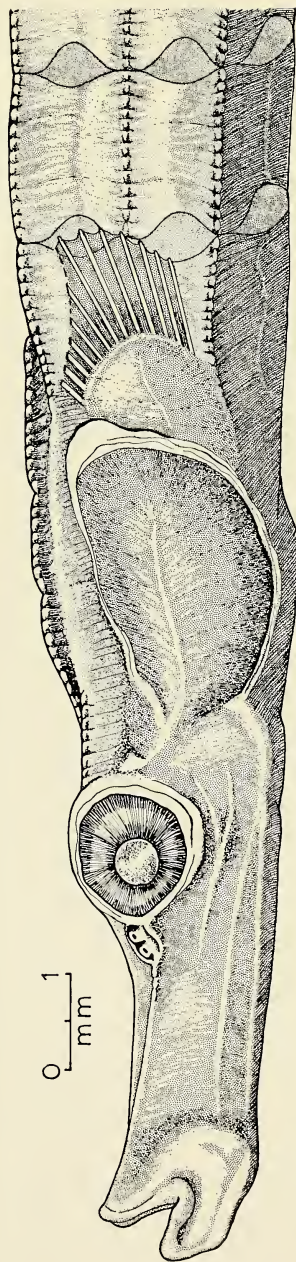


FIG. 2. Delineation of head and anterior trunk rings of *Pseudophallus brasiliensis*; MZUSP 10278, holotype.

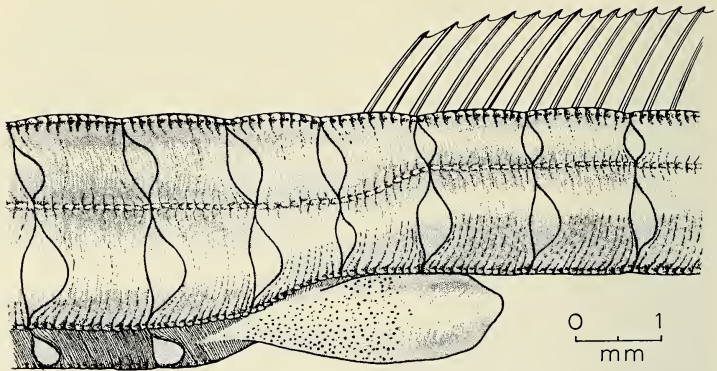


FIG. 3. Delineation of posterior trunk and anterior tail rings of *Pseudophallus brasiliensis*, illustrating ridge pattern, dorsal fin location and anal papilla of USNM 212058; allotype.

ridge pattern typical of *Pseudophallus*, i.e., lateral trunk ridge continuous across anal ring, uniting with superior tail ridge near right angle from posterior end of dorsal fin, usually with some irregular degree of deflection at or near anal ring (Fig. 3). Lateral line neuromasts indistinct. Dorsal fin originates at middle of first tail ring; anal fin absent; abdomen somewhat V-shaped in both sexes. Anal papilla of mature females much enlarged (Fig. 3), apparently smooth over its distal third, the middle portion distinctly papillose under  $30\times$  magnification; anal papilla measured 1.9 mm (from posterior basal angle to tip) in allotype, 2.4 mm in 66 mm fish (GCRL 12755). Brood pouch of holotype covers 13 tail rings and contains eggs through 12 rings; maximum diameter of 5 measured eggs with eyed larvae was 1.1 mm.

Ground color tan to brown, markings brown to near black, generally darkest on venter. Markings highly variable, generally distinctly blotched and mottled with brown (Fig. 1), most frequently with up to 13 irregularly spaced, narrow, pale bands on trunk and tail; head irregularly blotched, snout without a lateral stripe; iris crossed by up to 10 brown bars somewhat narrower than interspaces; dorsal and pectoral fin rays irregularly edged with brown melanophores; caudal fin dark brown with narrow pale margin. Proximal half of anal papilla of mature females heavily pigmented with brown melanophores, distal portion pale to nearly white with few flecks of brown.

*Etymology*: Named *brasiliensis*, in reference to the Brazilian type-locality.

*Comparisons*: Principal features differentiating *Pseudophallus brasiliensis* are given in the key below.

*Discussion*: The amphi-American genus *Pseudophallus* now includes four closely related forms that appear to be largely restricted to fluvial

TABLE 1. Frequency distributions of dorsal fin rays in species of *Pseudophallus*.

Species	N	Dorsal fin rays														$\bar{x}$					
		27	28	29	30	31	32	33	34	35	36	37	38	39	40		41	42	43	44	45
<i>starksi</i>	325											5	46	89	79	75	27	3	1		39.8
<i>mindii</i>	31						4	5	6	2	8	2	3		1						36.1
<i>elcapitanensis</i>	60			1	5	25	18	8	3												32.6
<i>brasiliensis</i>	8	1	5*	1	1																29.2

\* holotype.

TABLE 2. Frequency distributions of total body rings (trunk rings + tail rings) in species of *Pseudophallus*.

Species	N	Total body rings													$\bar{x}$
		43	44	45	46	47	48	49	50	51	52	53	54		
<i>starksi</i>	324				3	10	8	4	31	179	106	8		51.3	
<i>mindii</i>	30						4	4	4	1			48.0		
<i>elcapitanensis</i>	60						4	36	19	1			49.3		
<i>brasiliensis</i>	8		3	5*									44.6		

\* holotype.

habitats. All exhibit considerable overlap in meristic or morphometric characters but they appear to represent distinct taxa. Meristic features, such as frequencies of dorsal fin rays or total body rings (Table 1 and 2), alone do not permit identification of single specimens, but little difficulty is encountered when multicharacter comparisons are employed.

The late Earl S. Herald (unfinished Ms.) treated the Atlantic *P. mindii* as a subspecies of the Pacific *P. starksi* and retained species rank for the other Pacific form, *P. elcapitanensis*. He was, however, unaware of the new Brazilian form and had not seen much of the material examined by me. My data indicate a modal shift from 40 to 39 dorsal fin rays between Mexican and Costa Rican-Panamanian populations of *P. starksi*, but there is no evidence of clinal variation in the other species. The Pacific forms are sympatric in Costa Rica and Panamá and sympatric populations of *P. mindii* and *P. brasiliensis* may occur in Brazil. Pending collection of more extensive series from Atlantic drainages, I retain species rank for each of the four nominal forms of *Pseudophallus*.

Provisional key to the genus *Pseudophallus*

1. Trunk rings modally 14 (99%); Pacific species ..... 2  
    Trunk rings modally 13 (78%); Atlantic species ..... 3
2. Dorsal fin rays 37 to 44 ( $\bar{x} = 40$ ); dorsal fin covers 9.0 to 11.0 ( $\bar{x} = 9.7$ ) rings; trunk rings 13 to 15 ( $\bar{x} = 14$ ); usually with a distinct, broad, brown stripe on snout and short ventrally directed brown bar or blotch behind eye; Baja California Sur, México to Ecuador ..... *P. starksi* (Jordan and Culver)
- Dorsal fin rays 30 to 35 ( $\bar{x} = 33$ ); dorsal fin covers 6.75 to 7.50 ( $\bar{x} = 7.1$ ) rings; trunk rings 14; without postorbital bar or stripe on snout; Costa Rica and Panamá .....  
    ..... *P. elcapitanensis* (Meek and Hildebrand)
3. Dorsal fin rays 33 to 41 ( $\bar{x} = 36$ ); dorsal fin covers 7.50 to 10.25 ( $\bar{x} = 8.7$ ) rings; length of dorsal fin base in head 0.6 to 1.0 ( $\bar{x} = 0.7$ ); rings total 46 to 51 ( $\bar{x} = 48$ ); head ridges usually indistinct or obsolete in adults; usually with postorbital blotch and stripe on snout; Cuba, Jamaica, Guatemala to Panamá, Venezuela and Brazil ..... *P. mindii* (Meek and Hildebrand)
- Dorsal fin rays 28 to 31 ( $\bar{x} = 29$ ); dorsal fin covers 6.75 to 7.25 ( $\bar{x} = 7.0$ ) rings; length of dorsal fin base in head 0.9 to 1.0 ( $\bar{x} = 1.0$ ); rings total 44 to 45 ( $\bar{x} = 45$ ); head ridges prominent in adults; without postorbital bar or stripe on snout; Rio Tocantins, Brazil ..... *P. brasiliensis* new species

LITERATURE CITED

- HERALD, E. S. 1940. A key to the pipefishes of the Pacific American coasts with descriptions of new genera and species. Univ. S. Calif., Allan Hancock Pac. Exped. 9(3):51-64.